

Two Rival Conceptions of Vocational Education: Adam Smith and Friedrich List

CHRISTOPHER WINCH

ABSTRACT *Two different versions of capitalist political economy are explained. The first is the classical model of Adam Smith. The second is the social capitalist model associated with Friedrich List. Smith's views on education and training are clearly articulated in The Wealth of Nations while List's National System of Political Economy, although it does not deal explicitly at any great length with education and training, is pregnant with implications for vocational education. Two different varieties of vocational education emerge from a comparison of these two political economists. Smith proposes a market-led low skill model of training, while List proposes a high-skill model sustained by the state and institutions of civil society, such as craft guilds. The two models follow directly from the overall contrasting conceptions of political economy and are directly relevant to the study of vocational education and training systems in the different varieties of capitalist economy extant in the contemporary world.*

INTRODUCTION

This paper examines and discusses two views of the nature of vocational education and training: one associated with the classical political economy of Adam Smith, the other with the much less well-known 'social capitalist' model of Friedrich List, who was an early critic of classical political economy (for early German critics of Smith, see Biernacki, 1995). I set out the conceptual basis of political economy developed by Smith and contrast it with the very different one developed by List. Next, I go on to examine Smith's views on education and vocational training and to conjecture what a Listian approach might look like. As far as I am aware, List did not write at length about educational and training matters, but his work is pregnant with educational and training implications that I will try to draw out from the main body of his work. I will then consider what the issues separating them are and what the implications of those differences might be for a modern economy. Since Smith is very well known in the UK and List is hardly known here at all, it might be asked why one should bother with List. I would like to say a few words about this.

Although List wrote his major work nearly 70 years after Smith's *Wealth of Nations*, the German context in which he wrote was, in many ways, that of a much less advanced political economy than that of the UK of Smith's day. Germany was still divided into petty kingdoms with their own customs barriers and separate currencies. In many ways, the society retained features of precapitalist economic life: guilds, artisanal production and strong governmental regulation of economic activity (see Biernacki, 1995). List was a reformer who wished to modernise Germany while retaining her economic and

cultural strengths, but also while avoiding what he saw as the inhumanity and free market brutalism of British economic conditions.

Smith's account of the economy was of a nexus of individuals and their activity, in which values are produced, exchanged and consumed. In the context of his overall moral theory, which lays due stress on other-regarding sentiments and virtues (see Smith, 1759), Smith's account of the moral psychology of economic activity appears to be largely, if not exclusively, based on self-regarding sentiments and the cultivation of self-regarding virtues. Without putting too fine a point on the matter, it can be said that, for Smith, selfish behaviour is morally appropriate in economic life, subject only to constraints on the harming of others (A. Skinner in Smith, 1776, p. 44). The separation of the economic from other areas of human activity is central to an understanding of Smith (and of course, was taken up most famously by Marx) and, if it is untenable, then the account of economic life that depends on it is likely to be gravely flawed. It should be observed that Smith opts for a fairly strong version of this separation. It is not merely an analytical distinction made for the purpose of economic model-making which then has to be tempered in its application to real-life economic activity. Smith appears to have thought, not only that human moral psychology in the economic sphere *was* based on selfishness, but that it *should* be. And it is not just a matter of alteration of emphasis towards selfishness in the economic sphere as opposed, say, to family life, but is, apart from the minimal constraint noted above, an exclusive basing of economic behaviour upon selfishness.

The following passage is very well-known but it is worth quoting yet again because it shows how clearly Smith moves from a relatively cautious expression of the importance of self-interest at the beginning of the paragraph to a much more full-blooded expression of the functionality of self-interest in economic life.

... man has almost constant occasion for the help of his brethren, and it is in vain for him to expect it from their benevolence only. He will be more likely to prevail if he can interest their self-love in his favour, and show them that it is for their own advantage to do for him what he requires of them. Whoever offers to another a bargain of any kind, proposes to do this. Give me what I want, and you shall have this which you want, is the meaning of every such offer; and it is in this manner that we obtain from one another the far greater part of those good offices which we stand in need of. It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our necessities but of their advantages. (Smith, 1776, Bk I, Chapter 2).

He moves from saying that it is inadvisable for a man to rely only on the benevolence of 'his brethren' to stating that we appeal to their advantages, never to our necessities. The general tenor of the passage makes it clear that Smith considers self-love to be the prime motivating factor and he does not specifically exclude the non-economic areas of life from this view ('a bargain of any kind'). So it applies not only in activities of direct production and exchange, but in para-economic activities such as training and professional formation (Smith, 1776, Bk I, Chapter 10). No other serious moral philosopher has thought that moral behaviour and attitudes were context dependent in this kind of way. One may doubt whether humans could alter their morality from context to context, so that the same person could be a Melmotte in the boardroom and a Knightley in the drawing room, even if we make the dubious assumption that there is

an area of life which is distinctly economic (Kay, 1996). In practice the successors of Smith have tended to extend the selfishness account to other spheres of activity as can be seen, for example, in public choice theory (Orchard & Stretton, 1994). A grasp of this feature of Smith's account of economic life is essential to an understanding of the difference between his approach and that of List and for appreciating the radical nature of List's approach.

THE DIVISION OF LABOUR

Smith is well known for his identification of the principle of division of labour as an engine of economic progress. It is less clear, however, that he had an unambiguous idea of what exactly it was and this in turn has a bearing on his views on education and training. He fails to distinguish between the following, holding them all to be characteristic features of a modern economy.

(1) Between different kinds of production (manufacture and agriculture; between ladies' shoe manufacturing and gentlemen's) (Smith, 1776, Chapter 1). Such a division has obvious advantages in terms of economies of scale and the making use of a competitive advantage in a certain geographical area (e.g. proximity to running water for water-powered machinery) but does not, of itself, have any implications for the way in which any specific production process is organised or for the division of labour in any other sense. As List pointed out, this kind of specialisation leads to symbiosis; the concentration of machinery-making in urban areas allows for the development of agricultural machinery, which increases production so as to support a greater urban population (List, 1991, Chapter XX).

(2) Between different stages in the production process (pinmaking). This is run together with (1) right at the beginning of *Wealth of Nations* and is the distinction for which Smith is, perhaps, most famous. The breaking down of a production process like pinmaking may lead to a better use of the same material and human resources and hence to more rapid and cheaper production. If less labour is put into the manufacture of a pin then it will cost less. The greater availability of pins in the market place will also tend to bring the price down. By breaking down the labour process in this way the skill element required from each human in a manufacturing process is diminished. This happens in two ways; first, by the disarticulation of a series of skills, each worker does not need to be either multiply skilled or able to manage the articulations between each part of the process. (List was to point out, however, that this articulation would itself require complex co-ordination and, although he does not spell it out, it requires the development of a cadre of management to oversee that articulation—the 'line managers'.) Secondly, because of the simplification of the process as a whole and the fact that one person can perform one operation many times rather than many operations a few times, it becomes possible to allow one person to operate a piece of machinery that carries out, or assists in carrying out, that same operation many times over.

(3) Finally, Smith distinguished between the *invention* of a process and the machinery for putting that process into effect (like the manufacture of watches) on the one hand, and the putting of that process into effect as in (2). This particular distinction between mental and manual labour is an extreme one; there is the purely cerebral activity of invention, which, according to Smith, involves 'deep thought' and the more or less manual carrying out of the process adumbrated by the inventor. Although we have already seen that Smith was committed to reducing the individual skill content in a production process we can see, with this example, that he does so in an extreme way.

Not only is the process of production voided of skill, but the means of creating and improving it are as well; the line workers are agents for carrying out the process of production but they have no role in inventing or improving the artefact that they are manufacturing. This feature of Smith's account perhaps gave most weight to Marx's account of alienation. Through becoming divorced from any creative activity in production, man loses his species essence, which is to plan and to make according to a plan (Marx, 1858, pp. 87–88, 1887, p. 178). It is important to notice that there is no logical reason why a line worker should not be an inventor or an improver, just that Smith did not seem to attach any significance to his acting in this role. The role of invention, too, seems to be one of creating a qualitative leap from no artefact to artefact rather than the slow application of incremental improvements to both the product and to the process of its manufacture (Wickens, 1995, Chapter 2). The example does not explain Smith's relative inability to account for technological development through his economics but it does show that he seemed to work with a somewhat limited idea of what technological innovation was and how it comes about. Although the divorce of physical from mental work in the division of labour in the second sense is not a logical consequence of the process division of labour, it appears to follow naturally from it if one assumes that the mental component of labour is the *prior planning* of an activity. (This appears to be Marx's as well as Smith's view although it is noticeable that it was not apparently shared by Gramsci (1971, pp. 8–9).) If, on the other hand, one assumes that there is an intellectual or mental component to everyday work processes, then it by no means follows that the process division of labour more or less implies the total divorce of mental from physical activity. By 'mental' is not meant an internal, discrete thought process which is itself a kind of quasi-action, but the aspect of human activity that allows us to attribute understanding, diligence, care, forethought and so on to an activity, as well as more abstract activities like forming plans 'in one's head'. All of these are, in a sense, 'mental' activities, although it is a mistake to think of the last example as always something that is purely solitary and non-discursive, nor as something that is isolated from prior activities like teaching and practice.

The idea that this does always follow has led to the view of human manual work under conditions of the division of process-labour as something that has no mental component, and has led to the mistaken view that the role of machinery in a total work process is simply to substitute for a human element, rather than to alter the relationship between people and the process of work and, indeed, the character of the work process itself (Clarke & Wall, 1996). The picture of human labour as qualitatively no different from animal or machine labour makes it difficult to see how this could be so; how, for instance, the introduction of new machinery in building may allow for new methods of production and new skills and new arrays of skills to facilitate those new methods. Neither does it allow for the way in which *incremental improvement* may arise from the involvement of the worker in the application of a technique in a work process.

LIST AND SMITH ON POLITICAL ECONOMY

In the division of labour Smith thought that he had found the principle that made the best use of labour (Smith, 1776, Chapter 1 for an account of the division of labour; Chapter 8 for an account of the labour theory of value, particularly the last page). Without denying this, List nevertheless insisted on the importance of *productive powers* which he saw as all the means by which a nation generates, preserves and develops its

ability to produce. Smith and the other classical economists always leave out this vital factor in their account of political economy, he argues, so although they can explain how wealth is produced and augmented, they cannot explain how production can be sustained, how the underlying material, mental and moral resources of an economy can be cultivated and how technological improvement can come about. In order to do this, political economy needs the notion of productive powers.

Each writer therefore adopts a different way of conceptualising political economy. The classical model advocates *laissez faire* on the part of the State and suggests that a self-regulating economy based on short-term deal-making with a minimum of external restraint creates the best conditions for the creation of wealth. The Listian model stresses the long-term development of factors underlying the production of values as the way to material prosperity over a historical epoch. Smith's model is largely embraced and practised in the UK and the USA, List's is the model adopted in Germany, much of western Europe and arguably, the Pacific Rim. List represents a genuine alternative to the running of a capitalist economy in a way that Marx does not. Marx did not question the labour theory of value or the moral model of a *homo oeconomicus* as the principal actor within it. He was not able to develop an account of how technical innovation was possible and subordinated all aspects of human life to the economy. In these respects he follows in the footsteps of the classical political economists. List reconceptualises the whole field. The economy cannot be understood as a separate entity from the law, morals, religion and the state. They all affect it profoundly as well as being affected by it.

List was not just an academic opponent of English political economy. He considered it to be, in many ways, profoundly immoral. He also thought that it was against the interests of the emerging Germany. He thought that unrestricted free trade severely held back emerging industrial economies such as that of Germany and he did not consider that the application of Smithian economic techniques would develop Germany's economy over the long term. He uses a simple story to illustrate the differences in approach between himself and the classical economists. In the short term a family which uses its wealth to gain more money wealth will be better off than one which invests with a long term goal in mind; it will possess more exchangeable values. However, within a generation or two, the long term investor will not only be prosperous but will have gained the means of further extending that prosperity, while the family which attends only to short term gain will find that 'stupidity and poverty must increase with the diminution of the shares in the landed property' which, since it will not have been invested in, will become less and less productive (List, 1991, pp. 138–139).

The one puts out his savings at interest, and keeps his sons at common hard work, while the other employs his savings in educating two of his sons as skillful and intelligent landowners, and in enabling the other three to learn a trade after their respective tastes; the former acts according to the theory of values, the latter according to the theory of productive powers. (p. 139)

It can be seen from this short quotation that education and training are fundamental to the Listian outlook on economic development and it is arguable that, in the Vocational Education and Training (VET) systems of western Europe, especially Germany, a Listian model already exists. This will be explored further below. By productive powers, List means much more than machinery, work-relations and property relations. The

productive powers of a society, as we have already seen, comprise all these but also habits, wider social relations and institutions, including education, morality and religion. It is not that Smith believed that the accumulation of capital was unimportant or that human ability was not important (he regards the useful or acquired abilities of members of a society part of its fixed capital; Smith, 1776, p. 282), but that he does not consider the institutions, customs, practices, habits and beliefs of a society as any part of its general stock. Smith does, therefore, have a theory of productive powers, concerning those parts of the general stock which can be utilised to produce values. What he lacks is an account of how that stock and, in particular, the human part of fixed capital is not only reproduced, but maintained and enhanced from generation to generation. Neither does he, arguably, devote enough attention to the question of how human capital contributes to the development of other aspects of fixed capital such as bridges, machinery and technological inventions.

List's conception of productive powers, on the other hand, is derived so as to do just that. First of all, human capital consists not just in labour power as a form of physical strength, mental or manual skill or a combination of these, but as acquired habits and virtues of solidarity, discipline and self-discipline and other-regarding virtues such as courage, justice, charity etc. This argument is also put in Fukuyama (1996), Chapter 5, although without the richness of List's notion of productive powers. Smith's human is a self-interested atom in a mass of other such atoms. List's human exists in a society which is itself complex and enjoys a more complex moral psychology than the Smithian atom. He requires the company and esteem of his fellow men and his character as a workman is partly formed by his religious and moral outlook which emphasises much more than selfishness as a motive to economic action.

A modern society has a state, a national identity, and institutions which support the society itself and its economic life. Religion and morality, as well as the law, provide the basis for the development of those virtues which make men likely to work diligently, to co-operate with others and to seek to improve both themselves and the products that they make. Institutions like trade and craft guilds, and the apprenticeships associated with them, embody the skills on which production rests; they also provide the possibility for the nurturing and development of skills across generations, so that some skills may take generations to build up through refinement within a stable institutional base. Finally, the 'porous' (not solely economic) nature of such institutions provides the religious, social and moral motivation to maintain skill and to build on it. (For an emphasis on this kind of institution as an important factor in sustaining economic strength, see Streeck, 1989.) This would not be possible if humans were solely self-interested as Smith suggests. It is the fact that they value the esteem of others as much as their own material well-being that makes possible action which is other-regarding and which looks beyond the immediate benefit. List does not separate out a moral psychology for economic life from one applicable to the rest of life, but makes the assumption that a balance of self-and other-regarding virtues is just as appropriate in economics as elsewhere. He also emphasises, as Smith does not, the importance of social esteem, recognition and a decent social and cultural life as a motivating factor, as much as material success. At a superficial level the Smith of *Wealth of Nations* does appear to do so, but he is more concerned to show that people seek to impress each other, than to show that they seek the esteem of their fellows. The former sits well with the general approach of *Wealth of Nations*, the latter less so, unless one is prepared to accept a notion of psychic utility which would render all action self-interested.

SMITH, EDUCATION AND TRAINING

These are the main features of two differing views of the social basis of an economy. What are the consequences of these views for our understanding of VET? In this section, I will describe what Smith had to say about education and training and then go on to look critically at his account of the labour process and the economy, then ask how relevant his account of these matters is to a modern industrial society.

Smith on Education and Apprenticeship

Smith believed in a universal primary education which was not completely run by the state. There is no evidence to suggest that he thought that, for most of the workforce, education was necessary beyond that stage. This is not because he did not think that some occupations were complex and required formation, training or practice (see the example of agriculture), but because he thought that the division of labour would render such formation unnecessary for most people. The division of labour, according to Smith, has deleterious effects on the intellect of the workforce.

... the understandings of the greater part of men are necessarily formed by their ordinary employments. The man whose whole life is spent in performing a few simple operations ... has no occasion to exert his understanding or to exercise his invention in finding out expedients for removing difficulties which never occur. He ... generally becomes as stupid and ignorant as it is possible for a human being to become. (Smith, 1776, Volume 2, Book V, Chapter 1, p. 782)

Shackleton points out that Smith realises this outcome will outweigh the benefits that the division of labour is supposed to bring to society and so prescribes education as a remedy. In addition, education allows for the development of a society alert enough to examine critically the claims made by self-interested bodies and individuals (1976, p. 81). This aspect of Smith's views of education relates to broader aspects of his political economy and, in particular, to the idea that corporate bodies and combinations of powerful individuals, acting in the interests of their members, could gain excessive power within the society and disrupt the workings of the market. His suspicion of corporate bodies led him to view some kinds of educational institutions with considerable suspicion. This was true of the old universities and of guilds (with their associated system of apprenticeship), which acted to control the labour supply and to bid up the price of labour beyond what it would be in a free market. There were, then, two reasons why extended education would be unnecessary for the mass of the people, at least as far as their ability to contribute to economic life is concerned. First, elaborate and long-drawn-out approaches to vocational education and training distorted the working of labour markets. Second, because advances in the division of labour rendered the skills that they developed redundant in most cases.

What, according to Smith, would a VET system look like? We have already looked at his treatment of basic primary education and what its aims are. Smith's views about specifically vocational education and training follow quite closely from his views (a) about human motivation, (b) about the consequences of the division of labour and (c) his antagonism to external interference in the workings of the economy which is seen as a largely homeostatic system. Since people act out of individual self-interest then it may be in their interests to set up institutions which interfere with the workings of the market. Employer combinations, trades unions and occupational guilds are all exam-

ples of such institutions. Smith is especially hostile to the guilds and their associated apprenticeship systems of vocational education. He sees apprenticeship as promoting idleness, economic conservatism and the bidding up of labour prices beyond the market clearing rate.

The institution of long apprenticeships has no tendency to form young people to industry. A journeyman who works by the piece is likely to be industrious, because he derives a benefit from every exertion of his industry. An apprentice is likely to be idle, and almost always is so, because he has no immediate interest to be otherwise. In the inferior employments, the sweets of labour consist altogether in the recompense of labour. They who are soonest in a condition to enjoy the sweets of it are likely soonest to conceive a relish for it, and to acquire the early habit of industry. A young man naturally conceives an aversion to labour when for a long time he receives no benefit from it. The boys who are put out to apprentices from public charities are generally bound for more than the usual number of years and they generally turn out to be very idle and worthless. (Smith, 1776, p. 139)

(It should be noted that Smith is talking here about a particular type of apprentice who most certainly could not be considered typical of the range of apprentices.)

One can see here key Smithian themes concerning self-interest, one's short-term conception of what it is and, following from these the need for rewards to be immediate if they are to promote industrious habits. In addition, he was sceptical about the need for skilled labour, arguing that the division between mental and physical forms of labour meant that the need for skilled labour would be relatively limited and confined to such tasks as invention, in contrast to the period preceding the discovery of the division of labour, when jobs like that of agricultural workers were relatively complex.

The first invention of such beautiful machines, [clocks and watches—CW] indeed, and even that of some of the instruments of work employed in making them, must, no doubt, have been the work of deep thought and long time, and may justly be considered as among the happiest efforts of human ingenuity. But when both have been fairly invented and are well understood, to explain to any young man, in the completest manner, how to apply the instrument and how to construct the machines, cannot well require more than the lessons of a few weeks; perhaps those of a few days might certainly be sufficient. (Smith, 1776, pp. 139–140)

Thus, the division of labour in senses (2) and (3) can be seen to have, among their other effects, the decline in a need for skilled labour, except certain kinds of mental labour, which would require very few people. This effect has another, for economists of liberal bent, pleasing consequence. Since there is no requirement for vocational education and training there is, therefore, no need to provide it so the inconvenient problem of providing public goods which cannot be provided through individual action is obviated. Public goods are here defined in terms outlined by Orchard and Stretton, as a form of social capital even when, as in the case of training, they are consumed privately. It is their transferability as well as their social benefit that are important here. The outline of a Smithian system of vocational education and training can therefore be summarised as follows.

- (1) The provision of a substratum of primary education to ensure basic literacy and numeracy.

- (2) The development of a higher system of education for those who are likely to be inventors and engineers (although even this is problematic).
- (3) The provision of On the Job Training (OJT) for unskilled and semiskilled work as and when there is a market demand for the relevant products.

HOW A LISTIAN MODEL OF VOCATIONAL EDUCATION AND TRAINING MIGHT LOOK

This question cannot be properly answered without a consideration of the key feature of political economy conceived of in the Listian manner. This is to put the *development of productive powers* in the centre of economic concern, with at least as much importance as current production and consumption. This means that economic policy will tend to be long-term and future-oriented. The concern with productive powers is also, in considerable part, a concern with the continuing development of competitive advantage based on long-term socio-economic as well as material assets. List is clear that this requires both state planning and institutional preservation and development in changing circumstances. However, there is an internal logic to economic development which it must be the goal of economic policy to develop.

If productive powers are developed, this implies that the general education and skill levels of the population are increased. This means in turn that the levels of skill are available to create certain kinds of goods and services and there are consumers who can purchase those goods and services. A couple of examples might make this clear.

- An illiterate and innumerate population cannot support a large printing and information diffusion economy. On the other hand, the existence of a numerate and literate population will create a demand for such products, not just for leisure consumption but as a way of improving production processes as well.
- An agricultural economy may well support an industry producing agricultural machinery, agricultural chemicals and research stations, provided that there is sufficient knowledge within the agricultural sector to make use of the products available. Where there is such a population, it will itself create new demands.

When investment is made and the conditions exist for that investment to be employed productively through the existence of demand for the products generated, then one has what is sometimes known as a 'high-skill equilibrium' in which the interests of workers, employers, state and consumers are all satisfied Pareto-optimally, which is to say that if any change was made to the existing arrangements, one party would be worse off. The problem of the creation of a high-skill equilibrium is a typical co-ordination problem in which independently contracting parties will not find it in their interests to make the investments necessary to bring about a maximally beneficial result. (A maximally beneficial result can here be described in terms of utilities achieved as a result of following a dominant strategy as in a prisoner's dilemma.) The provision of training which may be poached provides a good example of how difficult co-ordination is. Finegold has described the situation as a typical public goods problem that requires a degree of state intervention in order to arrive at the maximally beneficial result (Finegold, 1991). The result will be an equilibrium, that is, a medium to long-term stable solution to the problem. State intervention is likely to be necessary to create the condition for high-skill equilibria although not sufficient. It is no use, for example, prescribing training levies on employers who do not have the traditions or expertise to carry out effective training. The development of appropriate institutions in civil society

is not something that a government can do readily and almost certainly not in the short term.

Just as high-skill equilibria are possible, so also are low-skill equilibria (Keep, 1993; Ashton & Green, 1996). With low-skill equilibria it is in everyone's interest to conduct economic life on the basis that the consumption patterns and skill levels of the population are mutually reinforcing at a level which requires little education and training. It follows quite clearly from List's approach that a developing industrial society should try to establish high-skill equilibria partly at least through ensuring the provision of a workforce with skills to make new products. These workers, in turn, would be well enough remunerated to provide a market for the sale of such products. Since a high-skill equilibrium cannot be assumed to arise solely through the operation of market forces, outside intervention through the state is likely to be necessary. This does not imply that vocational education should be provided by the state, but that the state provide the conditions necessary for it to promote a high-skill equilibrium by, at one level, the provision of school-based pre-vocational education and, at another level through the development of technical institutes and universities and finally through the nurturing of commercial institutions of civil society so as to promote skill development and education in an occupational context. (On the importance of the occupational context, see Streeck, 1989.)

List also questions the distinction between productive and non-productive employment that is central to the Smithian model. His rejection of this distinction is bound up with the concept of productive powers. In classical political economy a worker is productive only if he produces or directly contributes to the production of an exchangeable value (Smith, 1776, Bk II, Chapter 3). Non-productive work includes state administration, domestic work, some forms of entertainment and the production of scholars, insofar as they are not turned into exchange values like books. (Smith was criticised in Germany for his refusal to recognise services as bearers of exchange value, see Biernacki, 1995, Chapter 6.) For Smith, abilities are part of fixed capital, but only if they contribute to production. It seems as if, for such a conception of political economy, that education cannot make any significant contribution to economic development if it does not contribute to the development of workers who produce or contribute to the production of exchange values.

The Listian concept of productive powers is partly based on a rejection of this rigid distinction between productive and non-productive labour. Since some non-productive labour indirectly contributes to the production of exchange values as well as to the sustaining and development of productive powers even though it is not, strictly speaking, part of the fixed capital deployed in production. The development of this non-productive labour will be a vital part of education and training that contributes to economic development. List expresses this point in a characteristically trenchant fashion.

The man who breeds pigs is, according to this school [i.e. that of Smith and his followers—CW], a productive member of the community, but he who educates men is a mere non-productive. The maker of bagpipes or jews-harps for sale is a productive, while the great composers and virtuosos are non-productive simply because that which they play cannot be brought into the market. The physician who save the lives of his patients does not belong to the productive class, but on the contrary the chemist's boy does so, although the values of exchange (viz. the pills) which he produces may exist only for a few

minutes before they pass into a valueless condition. A Newton, a Watt, or a Kepler is not so productive as a donkey, a horse or or a draught-ox (a class of labourers who have been recently introduced by M'Culloch into the series of the productive members of human society). (List, 1991, p. 142)

He goes on to say:

The errors and contradictions of the prevailing school to which we have drawn attention, can be easily corrected from the standpoint of *the theory of the productive powers*. Certainly those who fatten pigs or prepare pills are productive, but the instructors of youths and of adults, virtuosos, musicians, physicians, judges, and administrators, are productive in a much higher degree. The former produce *values of exchange*, and the latter *productive powers*, some by enabling the future generation to become producers, others by furthering the morality and religious character of the present generation, a third by ennobling and raising the powers of the human mind, a fourth by preserving the productive power of his patients, a fifth by rendering human rights and justice secure, a sixth by constituting and protecting public security, a seventh by his art and by the enjoyment which it occasions, fitting men the better to produce values of exchange. (List, 1991, pp. 143-144)

The theory of productive powers then suggests that the distinction between labour that is deployed directly to produce exchange values and labour which is not, is not necessarily a distinction between economically valuable and valueless labour. Indeed, List is prepared to assert that some forms of 'non-productive' labour (e.g. composing music) are of far greater long-term economic importance than some forms of productive labour (e.g. fattening pigs). This passage suggests that List does not see a sharp divide between liberal and vocational aims of education either. The playing of a musician, for example, may well be of intrinsic value, and of personal value to the musician himself, but it also has a role to play in the development of productive powers through the way in which the musician contributes to the spiritual renewal of workers. It should be added that modern technological developments allow the composer and the musicians to become directly productive workers in Smith's sense, but that should not detract from the deeper point that List is making about productive powers. Similar points can be made about a whole range of activities that are not directly productive.

Given these considerations and given the fact that List did not write directly about educational matters, is it possible to construct a Listian model of vocational education and training? I will suggest that it would at least incorporate the following key features.

(1) *State sponsorship of key features of the education system.* These would include all those that are unlikely to be provided by the market, including elementary and secondary schooling, institutions that mediate between education and work (such as the German *Berufsschulen*) and technical institutes and scientific universities. It would also include the development of institutes of further and higher education which nurtured those non-productive occupations such as music and dance which, nevertheless contribute to the development of productive powers (List, 1991, pp. 81-82).

(2) *The presence of 'porous' (in Streeck's sense) institutions which induct new workers into the work activity in its fullest sense.* In List's view, human productive powers depend on the moral and social qualities of workers as well as their technical skill, if indeed these

different aspects can be meaningfully separated. Work-based vocational education will, then, need to be based on more than the development of technical skills but also on the development of moral, social and even religious qualities of the worker (p. 81).

(3) *The persistence of education in crafts and trades which continue to involve the human element which is necessary for developments in the work process.* It is at least arguable that a wholesale conversion to Taylorist production practices combined with a low-skill workforce provided with basic OJT would represent a significant running down of the productive powers of an economy if it were not compensated for in other ways. (By 'Taylorism' is usually meant the combination of the production line with the division of labour in sense (2); cf. Taylor, 1911.) A casual, unskilled workforce has no ability to develop new products and is mentally and morally disassociated from the process of production. It has no skills to pass from one generation to another and no trade or craft tradition. Without a long-term perspective there are no incentives to upgrade skills or to nurture trades and crafts. Replacing a skill-based economy with one based on unrelievedly Taylorist practices would be tantamount to destruction of existing productive powers without providing for new ones. This is not to say that an economy conceptualised around the idea of productive powers should be immune to the kind of innovations described by Smith and Taylor, but rather implies that any such innovations should be introduced in ways that do not jeopardise existing productive powers. This means that, even where Taylorisation is introduced, a human and moral element should remain within the production process. It also suggests that whatever innovations are made in production should, wherever possible, make use of already existing skills and should concentrate on production in high-skill, high value-added products. This suggests that traditional institutions associated with particular crafts and trades should be developed even within the context of modern mass production techniques. They need to retain their social and educational element and develop it in relationships with schools and colleges. The development of secondary technical education can then be associated with local and regional industries and with individual firms within the region in order to ensure a steady supply of skilled personnel to the industries and, hopefully, a supply of teachers to the schools and colleges (List, 1991, pp. 200–201). To use an example from a British context:

There are on the staffs graduate teachers of engineering who have in real industrial competition designed steel frame structures or electrical transformers or possibly diesel engines ... There are excellent craftsmen who have made tools and master gauges for famous pieces of engineering production. All this is a great thrill to the schoolboy ... the boy feels that he is already under the foreman, a first class craftsman who has made good on real jobs himself. (quoted in M. Sanderson, 1994, p. 49 from Spens, 1938, p. 106)

(4) *VET which combines OJT (for reasons given by Streeck) with the necessary general knowledge and skill (importance of understanding).* More advanced forms of production are likely to require relatively high levels of literacy, numeracy and general knowledge. But trade-specific skills and attitudes are only learned properly in the workplace. Therefore VET needs to combine the two in a system such as the German 'dual system' (List, 1991, pp. 200–201).

(5) *Controversially, the development of secondary liberally oriented generic prevocational education (so as to develop an affinity with a trade, its traditions and an appreciation of its*

place within the society). This is explicitly an extrapolation of Listian principles to the situation of the late 20th century where rapidity of technological change has to be reconciled with the development of discipline-specific generic skills and a degree of theoretical, as well as practical, knowledge. Such an education can be justifiably described as 'liberal in orientation' for the following reasons: it incorporates elements of traditional liberal education (e.g. mathematics, English); it is concerned with personal fulfilment; it promotes autonomy through the promotion of independence and qualities of character such as persistence, self-discipline, the pursuit of excellence and co-operation (Entwistle, 1970; Winch, 1995). Finally, there are many vocations which it is worthwhile for society to develop which are not directly productive. This in turn suggests the importance of the development of arts and crafts at all levels for the greater adornment of society and for the long-term development of productive powers (List, 1991, pp. 143–144).

(6) *What is most difficult to replicate, namely the density and complexity of institutions required to co-ordinate education and training: government, unions, employees, educational institutions of various kinds.* Such a complex of institutions would be concerned with the development of productive powers as well as human capital and would have a role in planning for future education and training as well as the maintenance of current activities. However, the Listian model suggests at this stage that civil society has an important part to play *in conjunction with the state* in the development of the economy and the state cannot bring institutions of civil society into being although it can create the conditions that favour their development. This strongly suggests that a Listian VET system has, to some extent, to grow out of the soil of the civil society in which it exists and cannot be transposed by governmental fiat.

CONCLUSION

A comparison of the political economies of List and Smith suggests not only widely differing views concerning the way in which an economy should be run but also concerning the development of vocational education and training. How VET is seen is bound up with questions about how people are motivated, what kinds of social conditions are necessary to motivate them and the general relationship between economy and society. Therefore the changing of a VET system, just like the changing of an education system more generally, is dependent upon and also has ramifications throughout society and politics. It cannot be a simple matter of a technical recipe to aid economic growth, but touches on the heart of what any society is about. To conceptualise an economy in the Listian way as a *political* economy is to make vocational education a central feature of society and, furthermore, a kind of vocational education which has strong liberal overtones. In the Smithian model there is short-term skill training on the one hand and high level scientific and technical education on the other, together with a small amount of liberal education for a leisured class and the ruling élite and a more basic level of education for the rest.

The choice of a particular form of vocational education and training is, then, a consequence of larger political choices concerning how society should be run and what conception of human flourishing should be pursued within that society. I leave it to readers to judge whether or not Listian and Smithian models of vocational education and training are, to some extent, to be found in particular societies.

ACKNOWLEDGEMENT

My thanks to Linda Clarke for comments on an earlier version of this paper.

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Correspondence: Professor Christopher Winch, School of Education, Nene College of Higher Education, Park Campus, Boughton Green Road, Northampton NN1 7AL, UK.